PATENT #31 Oral Hearing E. Saito 4/9/03

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex Parte Cherng
Appeal No. _____

Applicant:	Tzyh-Chyang Cherng and Yu Zhang
Serial No.:	09/160,991
Filed:	September 25, 1998
Art Unit:	3724
Examiner:	Hwei-Sui Payer
Title:	**CUTTING DIE AND METHOD OF FORMING**
Attorney Ref. No.:	BERL-18A

Cincinnati, Ohio March 28, 2003

Commissioner of Patents and Trademarks
Washington, D.C. 20231

REQUEST FOR ORAL HEARING

Noted. cp 4/23/03

Pursuant to 37 C.F.R. §1.194, Applicant respectfully requests an oral hearing on the appeal to the Board of Patent Appeals and Interferences in the above identified U.S. patent application. A check in the amount of $280 is enclosed.

Respectfully submitted,

WOOD, HERRON & EVANS, L.L.P.

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AF/3724

PATENT

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TRANSMITTAL

Transmitted herewith is a Request For Oral Hearing for this application. Applicant is other than a small entity; and further, Applicant believes that there is no additional fee for an extension of time required. If a fee for an extension of time is required, please charge Deposit Account No. 23-3000.

ALSO ENCLOSED:
Check for $280; Certificate of Mailing; Return Postcard

Respectfully submitted,

WOOD, HERRON & EVANS, L.L.P.

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Certificate of Mailing (37 CFR 1.8a)

I hereby certify that this paper (along with any referred to as being attached or enclosed) is being deposited with the United States Postal Service on the date shown below with sufficient postage as first class mail in an envelope addressed to: Hon. Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Date 3/28/03 Kristi L. Davidson

Kristi L. Davidson, Reg. No. 44,643

PATENT

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REPLY BRIEF

This paper is in response to the Examiner's Answer mailed on January 28, 2003. A Request for Oral Hearing is being submitted in a separate paper concurrently herewith.

The first issue is whether Baker and Maybon are properly combined, and whether the combination teaches and suggests the invention as claimed. The Examiner uses Maybon merely as a teaching reference to teach a laser as a heat source, and in doing so, ignores the teachings of the reference as a whole. Taking into account the claimed invention as a whole, and both Baker and Maybon in their entirety, the combined teachings of the references do not teach or suggest the claimed invention, and the combination is therefore inappropriate. The second issue is whether Appellant's secondary indicia of non-obviousness has been properly considered

for the positive evidence set forth therein. The Examiner's focus on what the declarations do not say has resulted in a failure by the Examiner to properly weigh the positive evidence.

Issue 1: Combination of Baker and Maybon

In Appellant's Appeal Brief, it was stated that "Baker uses known welding technology to produce hard blades on a relatively soft die body. Welding techniques first form a molten metal, then deposit globs or beads of the molten metal onto the die body using high, uncontrolled, unfocused heat. The welding technique is incapable of producing near net shapes, and extensive machining must be used to define the cutting blade. (See Baker Col. 3, lines 39-61.)" To this, the Examiner responds that the argument is "incorrect." To the contrary, the argument is quite valid.

First, the Examiner states that Baker is completely silent about the particular type of welding technique used, and that Baker does not mention using high, uncontrolled and unfocused heat. Second, the Examiner states that Baker's cladded hard material is in the form of a bead "that is the same as Appellant's cladded bead" and that "Appellant's cladded bead also requires machining to remove excessive material as that of Baker's." With all due respect, regarding the Examiner's first point, the reference need not expressly state that which is an inherent aspect of what is expressly disclosed in the reference. Regarding the second point, a laser bead is not the same as a weld bead, and while both require machining, the extent of machining differs significantly.

Welding is inherently a messy technique that inherently uses high, uncontrolled and unfocused heat. Appellant refers to the Declaration under 37 C.F.R. 1.132 of Dr. C. Rey Hsu

submitted with the Response of July 5, 2001. Although submitted long ago, this Declaration forms part of the record of this application, and thus, should be afforded due consideration in each action by the Examiner. Dr. Hsu set forth his extensive knowledge and experience in both the welding area and the laser area, and reviewed the application that is now on appeal, and thus, was in a position to compare the present invention with the welding process. Although specifically addressing the Tanaka et al. Patent, which formed the basis for a subsequently withdrawn rejection under § 103, Dr. Hsu also addressed the welding technique in general. He stated:

> Bernal's pending patent application discloses a laser cladding process, while Tanaka's patent discloses a welding process. Welding processes generally involve a large amount of heat being induced in the materials in the surrounding area of the weld, resulting in distortion and cracking to the product. The welding process also induces a large amount of residual stress in the die body and blade, which can cause cracking and corrosion. Distortion and residual stress also will cause the blade to actually move during operation of the cutting die, which causes tolerance problems. I believe the laser cladding process disclosed in the application provides a solution to these technical difficulties. The laser induces only a small amount of localized heat at the surface of the die body, causing little to no distortion of the surrounding area, and inducing little to no residual stress.
>
> The laser cladding process disclosed in the pending application is an accurate, highly controllable deposition process that is capable of producing a near net shape. Near net shape is a term of art referring to a shape that is close to the final desired shape, and which requires only a small amount of material removal. Welding on the other hand involves large, wide beads of deposited material that are hard to control with respect to defining a precise shape and providing accuracy and consistency. To produce a blade by welding, the deposited material must be subjected to significant machining after deposition due to the general messiness of the process. Laser cladding as disclosed in the application requires only modest machining to define the blade from the deposit due to the near net shape capability of laser deposition. Tanaka needed to deposit a soft material and machine it prior to hardening due to the significant machining required by virtue of using a welding process. For a cutting die produced in accordance with the pending application, a hard material may be deposited and machined due to the low amount of machining required with a near net shape deposit.

Tanaka differed from Baker in at least the respect that Tanaka was depositing a soft weld material and Baker was depositing a hard weld material, but the messiness of the welding process discussed by Dr. Hsu is irrespective of the hardness of the material being deposited. What is extremely relevant is the extent of machining required after deposit. With welding, machining is extensive, first requiring a rough machining step to remove the bulk of excess material, and second requiring a finish machining to shape the blade. This two-step machining requirement is set forth expressly in Baker. The welding technique is simply incapable of depositing a cutting blade to a near net shape. Laser cladding, on the other hand, requires only minimal finish machining because the blade can be deposited to a near net shape. So, while both welding and laser cladding both produce beads of deposited material, the weld bead is not the same as the laser bead, as alleged by the Examiner, and the two processes require significantly different machining requirements to produce the final blade. The need for extensive machining of the welded blade is precisely what led the formerly-cited Tanaka reference to depart from such teachings as Baker and instead deposit soft material that could be easily machined, followed by cryogenically treating the machined blade to harden it. Both the Baker and Tanaka references set forth the problems faced by the cutting die industry in building entire blade formations on a massive die body, which problems have not been adequately addressed until the present invention, nor addressed in the same manner as the present invention. These problems are simply not addressed by a reference, such as Maybon, that teaches only laser hardfacing.

It is Appellant's position that there is simply no teaching, suggestion, motivation, or problem or solution recognition in the prior art or elsewhere that would have led one of ordinary skill in the art to combine the Baker and Maybon references. The Examiner states that

the "issue before the Board is not whether Maybon teaches forming an entire blade on a die body from different material than the body but rather whether the combination of Maybon and Baker would have suggested to one having ordinary skill in the art to combine a well known heat source such as Maybon's laser beam for cladding Baker's hard material onto a less hard [sic] body substrate. The test for combining references is what the references as a whole would have suggested to one of ordinary skill in the art." (citing In re Sheckler, In re McLaughlin and In re Young.) Appellant does not agree with the Examiner's statement of the issue. While Appellant does agree that the obviousness test must consider the references as a whole, it does not appear that the Examiner is following this test. The Examiner has focused on a portion of the claimed invention and a portion of the Maybon reference, rather than considering the claimed invention and the Maybon reference each as a whole. Further, the Examiner has combined the references, then looked for the suggestion or motivation to do so. The teaching, suggestion or motivation to combine references must precede the combination.

The claims of the instant application are directed to forming a cutting die with a blade that is integral with and extending outwardly from the die body surface by building the blade outwardly from the surface by depositing with a laser a material that is harder than the die body, then shaping the blade. By virtue of the laser cladding process claimed, the blade is built in a near net shape, and the laser avoids inducing residual stress, distortion and cracking in the die body and blade by virtue of the focused, controlled heat applied. These achievements were not possible in the prior art welding techniques. Thus, the claimed invention, as a whole, is more than simply cladding a hard material onto a less hard body substrate. Baker is directed to welding hard material onto a die body, followed by excessive machining to form the blade, and

then finish machining to shape the blade. Maybon is directed to resurfacing the tops of ridges on a paper pulp defibering or refining plate. The ridge is first cast or otherwise formed integrally with the plate body from a first material, then a second, abrasion resistant material is added to the tops only of the ridges. Thus, the ridge and groove topography is first formed, and then in a second step, a small amount of hardfacing material is added to the already formed ridges by matching the laser path to the raised topography and adding to the topography. Accordingly, Maybon adds nothing to Baker in solving the problem respecting formation of the whole blade with a material different from that of, and on a relatively large mass of, the die body without inducing residual stress, distortion and cracking in the die body. As stated in In re Fine,

> Obviousness is tested by "what the combined teaching of the references would have suggested to those of ordinary skill in the art." . . . But it "cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching or suggestion supporting the combination." . . . And "teachings of references can be combined *only* if there is some suggestion or incentive to do so." . . . Here, the prior art contains none.

5 U.S.P.Q.2d 1596, 1599 (Fed. Cir. 1988) (citations omitted). Maybon does not teach or suggest forming a ridge or blade on a planar body surface from different material than the body. Maybon does not teach or suggest forming the entire ridge topography by laser cladding. Maybon is not addressing the problems faced by the present invention, nor faced by Baker, and thus, there is no suggestion or incentive to a person having ordinary skill in the art to combine the teachings of the references, nor would the combination result in the claimed invention.

The Examiner cites In re Sheckler, which holds that the test for combining references is what the references as a whole would have suggested to one of ordinary skill in the art, and that "[a]ll that is required to show obviousness is that the Applicant 'make his claimed

invention merely by applying knowledge clearly present in the prior art.'" The knowledge clearly present in the prior art includes the teachings of that art as a whole, such that Maybon teaches laser hard surfacing of ridge tops only, not just use of a laser as a heat source.

The Examiner also cites In re McLaughlin, which states that "the test for combining references is not what the individual references themselves suggest, but rather what the combination of disclosures taken as a whole would suggest to one of ordinary skill in the art." The combination of disclosures taken as a whole would suggest that a laser could be used to hardface the ridges of Baker produced by welding. The combination as a whole would not suggest or teach building the entire blade by laser cladding, as in the claimed invention.

The Examiner further cites In re Keller, which states that "the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of those references would have suggested to those of ordinary skill in the art." The Court in In re Keller, however, does not suggest that one may ignore portions of the teachings of one of the references when considering what the combined teachings would have suggested to one of ordinary skill in the art.

Maybon specifically avoids forming the entire ridge of the abrasion resistant material, thereby teaching against the present invention, and there is simply no motivation to combine the teachings of Maybon with that of Baker. As stated by the Court of Customs and Patent Appeals in In re Wesslau,

> The fallacy of this reasoning is that no one of the references *suggests* such a substitution, quite apart from the result which would be obtained thereby. Such

> piecemeal reconstruction of the prior art patents in the light of appellant's disclosure is contrary to the requirements of 35 U.S.C. 103. . . .
>
> The ever present question in cases within the ambit of 35 U.S.C. 103 is whether the subject matter as a whole would have been obvious to one of ordinary skill in the art following the *teachings* of the prior art at the time the invention was made. It is impermissible within the framework of section 103 to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art.

147 U.S.P.Q. 391, 393 (C.C.P.A. 1965) (citation omitted). While the Examiner would like to characterize the use of Maybon as "merely [ ] a teaching reference," the selection of only a portion of Maybon for combination with Baker while ignoring other portions of the reference that teach away from the combination is impermissible within the framework of section 103. The Federal Circuit, in vacating a finding of invalidity for obviousness in Bausch & Lomb, Inc. v. Barnes-Hind/Hydrocurve, Inc., cited the above passage of In re Wesslau and further stated that "[t]he district court also failed to consider the [ ] reference in its entirety and thereby ignored those portions of the reference that argued against obviousness." 230 U.S.P.Q. 416, 419-20 (Fed. Cir. 1986) (citing W.L. Gore & Associates, Inc. v. Garlock, Inc., 220 U.S.P.Q. 303, 311 (Fed. Cir. 1983), which states "In its consideration of the prior art, however, the district court erred . . . in considering the references in less than their entireties, i.e., in disregarding disclosures in the references that diverge from and teach away from the invention at hand.") One cannot pick and choose only parts of Maybon for combination with Baker where there is no suggestion for doing so. The laser heat source of Maybon is taught within the context of hardfacing the tops only of ridges on a paper pulp refining plate, and it is inappropriate for the Examiner to remove that teaching from its context in order to justify its combination with Baker.

With all due respect, the Examiner has relied on hindsight in reaching the obviousness determination.

> 'To imbue one of ordinary skill in the art with knowledge of the invention . . . , when no prior art reference or references of record convey or suggest that knowledge, is to fall victim to the insidious effect of a hindsight syndrome wherein that which only the inventor taught is used against its teacher.' . . . One cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention.

In re Fine, 5 U.S.P.Q.2d at1600 (citing W.L. Gore, 220 U.S.P.Q. at 312-13). The use of hindsight to piece together the claimed invention to establish obviousness where there is no teaching, suggestion or motivation in Baker, Maybon or the knowledge of a person having ordinary skill in the art to make such combination is clearly improper.

> Obviousness . . . cannot be established by combining the teachings of the prior art unless the prior art contains some teaching, suggestion or incentive which would have led one skilled in the art to combine the relevant teachings of those prior art references. . . . It is not permissible to pick and choose only so much of any given reference as will support a given position and ignore the reference in its totality. . . . Nor may the claims . . . be used as a blueprint and abstracted individual teachings from the prior art references be used to create the invention . . . .

Lubrizol Corp. v. Exxon Corp., 7 U.S.P.Q.2d 1513, 1527 (N.D. Ohio 1988) (citations omitted). Thus, the combination of Baker with Maybon is improper and incapable of suggesting the invention specifically claimed here. Not even the combination, if deemed suggested, would produce the invention, as the combination would only suggest laser hardfacing of the weld-deposited cutting blades. When considered as a whole, as all references are required to be, Maybon merely teaches laser hardfacing of cast ridges on a pulp refining plate, and teaches against full formation of the ridges by the laser. Maybon does not address the problem of full blade formation on a cutting die, and does not suggest that welding and laser hardfacing are

interchangeable techniques. There is nothing in the references as a whole that would suggest to one of ordinary skill in the cutting die industry to look to the field of hardfacing cast ridges on paper refining plates for a solution to the problem of entire die blade formation, nor does the Maybon reference provide a solution. Maybon only teaches hardfacing. Thus, Maybon is not clearly pertinent to the particular problem with which the inventors were involved, and does not teach or suggest the substitution that the Examiner makes. Appellant is not arguing that the Maybon features must be capable of bodily incorporation into Baker, as the Examiner seems to be suggesting in her Reply, but rather, Appellant has repeatedly argued that there is no suggestion or motivation in the references themselves, or the then-accepted wisdom of the art, to make the combination as the Examiner has done.

Appellant respectfully asserts that it is improper to characterize Maybon as a teaching reference to justify picking and choosing those features of the reference that are helpful and ignoring the teachings of the reference as a whole. "Each prior art reference must be evaluated in its entirety, and all the prior art must be evaluated as a whole." Hughes Aircraft Co. v. U.S., 8 U.S.P.Q.2d 1580, 1584 (Cl. Ct. 1988). "It is impermissible to disregard portions of a prior art reference that teach away from an invention, [a]nd at all costs, the mistake of picking random bits of various prior art references and employing them as a 'mosaic to recreate a facsimile of the claimed invention' must be avoided." Id. at 1586 (citations omitted). Considering each reference as a whole, and the prior art as a whole, there is no teaching, suggestion or motivation to combine the references to arrive at the claimed invention, as a whole. Because the Examiner bears the burden of establishing a case of *prima facie* obviousness,

and that burden has not been met, as set forth above, Appellant respectfully requests that the rejections be reversed.

Issue 2: Secondary Evidence to Rebut Finding of Obviousness

The Declarations submitted by Mr. Harrison, Mr. Bell and Mr. Madill together provide positive evidence of the following:

- The customers have been in the cutting die industry for 17-20 years;
- Blade repair on cutting dies is time consuming and expensive, resulting in down time in the manufacturing plant, and thus, loss of productivity;
- Longer die blade life reduces frequency of repair, and consequently, reduces loss of productivity in the plant;
- The customers are now using cutting dies produced by the claimed invention;
- The cutting dies produced by the claimed invention have a longer blade life than any other cutting dies used during the 17-20 years that the customers have been in the industry; and
- The cutting dies produced by the claimed invention are superior to other dies used by the customers.

This evidence of longer die life, and thus superior results, has not been properly considered by the Examiner.

The Examiner contends that the Declarations fail to demonstrate unexpected results or properties due to the use of the particular heat source, and that the Declarations fail to compare the closest prior art under identical conditions except for the novel features of the invention. While the Declarations don't specifically state that the Declarants previously or

currently use a rotary die made by the Baker method, they do state that they have been in the rotary die business for 17 and 20 years, respectively, and that the dies of the present invention provide longer die life than any die they have previously used or are currently using. This would include dies made by welding techniques, such as that disclosed in Baker. Until the present invention, and certainly for at least the last 20 years, all rotary dies were made by machining and/or welding techniques. Thus, the superior results are directly attributable to the laser cladding process as set forth in the claims. As stated in Appellant's Brief, the difference between the present invention and the prior art is the technique by the which the blades are formed, and it is the blades that wear down causing the need for repair. The increased die life obtained by the dies of the present invention, as addressed by the customer statements, is thus attributable to a difference in the blades on the dies of the present invention and blades on the dies of the prior art. The difference in the blades, again, is the method of building them, i.e., laser cladding. Therefore, the superior results exhibited by the dies of the claimed invention are directly attributable to the difference of the claimed invention compared to all prior art dies.

The Examiner's comments regarding commercial success, competitive sales figures, nexus, sale promotions and advertising, etc. do not constitute a reply to Appellant's arguments, but a mere regurgitation of the Examiner's final rejection. Appellant does not understand why the Examiner keeps requiring competitive sales figures, as that is completely irrelevant to the purpose of the Declarations. The Examiner is focusing entirely on what the references don't say, and refusing to consider what the references do say. Because of the laser cladding process used, Appellant was able to focus on selection of the materials based upon their ultimate function. Because the blade can be deposited to near net shape with the requisite

hardness and having a composition different than the base material as appropriate for its function without regard to machining difficulties, long die life can be achieved, and distortion, cracking and tolerance problems are solved, resulting in a cutting die that exhibits consistency, accuracy and longevity in use as a direct result of the claimed process. As set forth in the statements, the cutting dies made in accordance with the claimed invention have met a long felt need in the industry for increased blade life. Both customers stated that they have experience longer die life than with any other cutting die currently available, i.e., a superior result. The declaration of Mr. Madill sets forth the nexus between the evidence of superior results and the claimed invention. Appellant further fails to understand the requirement that Mr. Madill show that commercial success is not due to other factors such as advertising and promotion. The requirement has no applicability to the present evidence. The customer statements are directed to those customer's actual experience of increased die life, and such increased die life will be present regardless of whether Mr. Madill's company engages in no promotion/advertising or extensive promotion/advertising.

All rotary cutting dies have a wear life for the blades. The statements by Mr. Harrison and Mr. Bell assert that the dies of the claimed invention have superior wear life compared to all other dies that they are using, i.e., dies of the prior art. Mr. Harrison and Mr. Bell set forth the advantages obtained by increased wear life, including increased productivity and huge cost savings for their plants. This type of evidence of superior results and long felt but unsolved need may be different than the type of evidence typically encountered by the Examiner, but that does not make it irrelevant as objective indicia of unobviousness. The superior results related to blade wear life compared to prior die blades are unobvious and of great commercial

practical significance, as evidenced by the affidavit and statements of Mr. Harrison, Mr. Bell and Mr. Madill. Thus, Appellant respectfully requests that finding of the Examiner, that the secondary indicia of non-obviousness is of little probative value, be reversed.

CONCLUSION

For the reasons stated, Appellant respectfully urges the Board to reverse the rejection of claims 1-22, 24-27 and 29-31.

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